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10/565,004	01/19/2006	Tsuyoshi Uehara	Q92479	5166
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EXAMINER				
CHEN, KEATH T				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/565,004

Applicant(s)

UEHARA ET AL.

Examiner

KEATH CHEN

Art Unit

1792

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 September 2008.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 and 27 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-12 and 27 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-8508)
Paper No(s)/Mail Date 09/02/2008
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 09/02/2008 has been entered.

Response to Amendment

2. The amendment of specification filed on 09/02/2008 is acknowledged. The claim amendment filed on 09/02/2008, addressing claims 1-12 and 27 rejection from the final office action (07/01/2008), by amending claims 1, 4, 11-12, and 27 is acknowledged and will be addressed below. The examiner notices Applicants stated that "no new matter is added" without citing support of the amendment.

Election/Restrictions

3. Claims 13-26 and 28-36 withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention II and IB, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 10/25/2007.

Claim interpretation

4. Claims 1, 4, 11, and 27 recite "a length, ..., of each of the two electrode members" in the last four lines has multiple meanings. A length can be any linear

dimension of the electrode physical size: the gap between the two electrode members, or the center to center distance, or the end to end distance of two electrode members. Claims 1, 4, 11, and 27 will be examined with all reasonable broadest interpretations.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1-12 and 27 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

Claims 1, 4, 11, and 27 recite "said workpiece is separated from the jet port at a distance ..., a length, in the short direction, of each of the two electrode members which are arranged in substantially same positions in the extending direction being larger than the distance, a length, in the extending direction, of each of the two electrode members being further larger than the distance" there is lack of support of this limitation. Note the figures of the instant application are not to-scale and there is no description in the disclosure demarking the criticality of the distance relationship.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35 U.S. Code not included in this action can be found in a prior Office action.

6. Claims 1-6, 11-12, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Perrin et al. (US 6281469, hereafter '469), in view of Okui (English translation of JP 2000109979, hereafter '979).

'469 teaches some limitations of:

Claim 1: A plasma processing apparatus (col. 2, lines 29-34) for plasmatizing a processing gas in a discharge space and jetting the plasmatized gas (col. 10, lines 64-66) so as to be contacted to a workpiece (#4, col. 7, lines 44-45, see also col. 1, lines 29-31) to be processed, said apparatus comprising: a first electrode row including a plurality of electrode members (Fig. 15, row #12A); a second electrode row (Fig. 15, row #12B) including another plurality of electrode members and arranged in a line parallel with said first electrode row; one of said electrode members of said first electrode row and one of said electrode members of said second electrode rows, which are arranged in substantially same positions in the extending direction, having opposite polarities and forming a row-to-row partial gap therebetween, said row-to-row partial gap serving as a part of said discharge space(col. 9, lines 1-4), one of said polarities being an electric field applying pole, the other of said polarities being a grounding pole (col. 6, lines 50-55, one of the electrode can be connected to ground); a row-to-row gap including said row-to-row partial gap formed between said first and second electrode rows, an introduction port (Fig. 20, #28) of the processing gas communicated with a side in a flowing direction (vertical direction in Fig. 20) orthogonal to the extending and short directions of said row-to-row gap (horizontal and perpendicular direction in Fig. 20), a jet port (Fig. 20, #23) communicated with a side opposite to the introduction port of said

row-to-row gap (jet port is opposite to the introduction port); a supporter (bottom electrode #20, col. 8, lines 2-3, See, Fig. 10, 13, 21, or 25) that supports said workpiece (#4) while said workpiece is separated from said discharge space to outside in the flowing direction during the jetting of the plasmatized gas (as shown in Fig. 10, 13, 21, or 25) and also while said workpiece is separated from the jet port at a distance (PG, Fig. 7) to outside in the flowing direction during the jetting of the plasmatized gas, a length (end to end distance between any two electrode members, P plus electrode size; P being the center to center distance as depicted in Fig. 13), in the short direction, of each of the two electrode members which are arranged in substantially same positions in the extending direction being larger than the distance (PG; since P and PG can be of the same order as P, col. 6, lines 20-27, P plus electrode size is larger than PG).

Claim 2: those of said electrode members constituting said electric field applying pole being connected to different power sources, respectively (col. 6, lines 56-58).

Claim 3: only those of said electrode members constituting said electric field applying pole being connected to a common power source (col. 6, lines 56-58).

Claim 4 (besides claim 1): two of said electrode members of each of said electrode rows arranged adjacent to each other in said extending direction being opposite in polarity with respect to each other (as shown in Fig. 15).

Claim 5: an in-row gap is formed (Fig. 15, the vertical gaps) between two of said electrode members arranged adjacent to each other in said extending direction in said first electrode row and/or said second electrode row, said in-row gap also forming a part of said discharge space.

Claim 6: one of said two electrode members includes a first surface (Fig. 15, top line of the first electrode of row #12B, facing #12A) forming said row-to-row gap and a second surface (the face that facing right) disposed at an angle (right angle) with respect to said first surface, and the other of said two electrode members (the second electrode of row #12B, grid patterned) includes a third surface (the face facing #12A) generally flush with said first surface and forming said row-to-row gap and a fourth surface (the face facing left) placed opposite to said second surface and arranged at an angle (straight angle) with respect to said third surface, said in-row gap being formed between said second surface and said fourth surface.

Claim 11 (besides claim 1): two of said electrode members of each of said electrode rows arranged adjacent to each other in said extending direction being same in polarity with respect to each other (col. 6, lines 8-11, periodicity can be omitted if desired).

Claim 12: an insulating partition wall (#24, spacer, Fig. 20, an enlarged view of Fig. 9) is interposed between two of said electrode members having said electric field applying pole which are adjacent to each other in said extending arranging direction.

Claim 27: A plasma processing apparatus for introducing a processing gas into a discharge space from an introduction port (Fig. 20, #28), plasmatizing the gas in said discharge space and jetting the plasmatized gas through a jet port (#23) so as to be contacted to a workpiece to be processed, said apparatus comprising: a first electrode row including a plurality of electrode members intersecting with a flowing direction toward said jet port from said introduction port (vertical direction in Fig. 20), a second

electrode row including another plurality of electrode members arranged in a line parallel with said first electrode row; one of said electrode members of said first electrode row; one of said electrode members of said second electrode rows, which are arranged at a first position in said extending direction, having opposite polarities (grounding pole is an opposite polarity, as defined at the later part of this claim) and forming a first row-to-row partial gap therebetween, said first row-to-row partial gap serving as a part of said discharge space, and another of said electrode members of said first electrode row and another of said electrode members of said second electrode rows, which are arranged at a second position adjacent to said first position, having opposite polarities with each other and forming a second row-to-row partial gap herebetween, said second row-to-row partial gap serving as another part of said discharge space, said electrode member which is arranged at the first position in said first electrode row and said electrode member which is arranged at the second position in said first electrode row having opposite polarities each other and forming an in-row gap therebetween, one of said polarities being an electric field applying pole, the other of said polarities being a grounding pole (above 20 lines substantially the same as discussed in claims 1 and 4 rejection above); an introduction part (#27 and #28, together) having said introduction port (#28) that includes a row-to-row introduction port (one of the opening facing a gap) disposed astride said first row-to-row partial gap and said second row-to-row partial gap (viewing from Fig. 15, a horizontal line) and an in-row introduction port directly connected to said in-row gap (#27 distribute gas to both row-to-row gas and in-row gap, see Fig. 15 as top view of Fig. 20), and a supporter

(bottom electrode #20, col. 8, lines 2-3, See, Fig. 10, 13, 21, or 25) that supports said workpiece (#4) while said workpiece is separated from said discharge space to outside in the flowing direction during the jetting of the plasmalized gas (as shown in Fig. 10, 13, 21, or 25) and also while said workpiece is separated from the jet port at a distance (PG, Fig. 7) to outside in the flowing direction during the jetting of the plasmalized gas, a length (end to end distance between any two electrode members, P plus electrode size; P being the center to center distance as depicted in Fig. 13), in the short direction, of each of the two electrode members which are arranged in substantially same positions in the extending direction being larger than the distance (PG; since P and PG can be of the same order as P, col. 6, lines 20-27, P plus electrode size is larger than PG).

'469 does not explicitly teach the limitations of:

Claims 1, 4, and 11: (the first electrode rows ... members) each being elongate in an extending direction and short in a short direction orthogonal to the extending direction arranged in a line in the extending direction; (the second electrode rows ... members) each being elongate in the extending direction and short in a short direction; a length, in the extending direction, of each of the two electrode members being further larger than the distance.

Claim 27: (the first electrode rows ... members) each being elongate in an extending direction and short in a short direction orthogonal to the extending direction arranged in a line in the extending direction, the extending and short directions being

intersecting with a flowing direction toward said jet port from said introduction port; (the second electrode rows ... members) each being elongate in the extending direction and short in a short direction; a length, in the extending direction, of each of the two electrode members being further larger than the distance.

'469 further teaches that the need for plasma processing of large surface workpieces (col. 2, lines 1-2) and the electrode members being elongate in an extending direction arranged in a line in the extending direction (Fig. 7) from a different view direction.

'979 is an analogous art in the field of plasma surface treatment (field of the invention), particularly in providing large area processing ([0004], line 2) for the purpose to achieve uniformity ([0004], line 4). '979 teaches an electrode array (#1, Fig. 3) depositing on substrate (#3-1) over a conveyor/supporter (R) while gas is discharged in the vertical direction (Fig. 2a).

'469 did not disclose the shape of electrode member in the claimed invention as being square instead of rectangular. It would have been an obvious matter to alter the shape of electrode members, since such a modification would have involved a mere change in the shape of a component. A change of shape is generally recognized as being within the ordinary level of skill in the art. In re Dailey, 357 F.2d 669, 149 USPQ 1966, MPEP 2144.04 IV B.

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have combined '979 with '469. Specifically, to have replaced the stationary substrate (for example, Fig. 21) with a conveyor/supporter and used two rows of electrodes as taught in Fig. 3 of '979 and to have changed the shape of the electrode to rectangular (see the paragraph above), using Fig. 7 as a guide to arrange electrode in an extending direction and using Fig. 15 as a guide to alternating the electrode polarity, for the purpose of achieving continuous coating and uniformity ('979, [0004] line 4), with a reasonable expectation of success.

The examiner takes official notice that it is a common knowledge to arrange electrode (or other objects) in the length-wise direction for the purpose to extend the electrode (or objects) because fewer electrodes would be needed to achieve a target length in two rows of electrodes in a conveyor system.

7. Claims 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over '469 and '979, further in view of Koga et al. (US 6518990, hereafter '990).

'469 and '979, together, teach all limitations of claim 6, as discussed above. '469 seeks sub-electrode arrangement (abstract) and teaches various configurations of two-dimensional electrode arrays, including triangular arrays where the in-row gap is at non right-angle to row-to-row surface (Fig. 15-17, col. 9, lines 7-9) are suitable.

'469 does not teach the limitations of:

Claim 7: said first surface and second surface form an obtuse angle and said third surface and fourth surface form an acute angle, said in-row gap being in a slantwise relation with said row-to-row gap.

Claim 9: said electrode row on the opposite side of said electrode row having said first surface, said electrode member located in the substantially same position as said electrode member having said first surface is arranged astride said first surface and the end face of said third surface.

'990 is an analogous art in the field of apparatus which utilizes plurality of electrodes to form charge on the substrate (abstract, Fig. 5), particularly in providing various electrode array arrangement (summary of the invention, col. 3, lines 8-44) for the purpose to achieve uniformity (col. 4, lines 19-26, '469, col. 13, lines 2-4). '990 provides a trapezoid electrode array (Fig. 16) having stable application of charge. Such trapezoid electrode array met the limitation of claim 7 and 9.

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have combined '990 with '469. Specifically, to have incorporated the electrode array arranged as taught in Fig. 16 of '990 into the electrode array of Fig. 15-17 of '469, for the purpose of achieving uniformity and stable application, with a reasonable expectation of success.

Further, '469 discloses the claimed invention except for the shape of electrode (from rectangle to trapezoid electrode array). It would have been an obvious matter to alter the shape of electrode members to various shapes already disclosed in '469, since such a modification would have involved a mere change in the shape of a component. A change of shape is generally recognized as being within the ordinary level of skill in the art. In re Dailey, 357 F.2d 669, 149 USPQ 1966, MPEP 2144.04 IV B.

For claim 8, '469 further teaches the rounding of electrode surface (for example, Fig. 12).

'990 further teaches the limitation of claim 8:

Corners on the side of the obtuse angle formed between said first surface and second surface are R-chamfered with a relatively large radius of curvature, while corners on the side of the acute angle formed between said third surface and fourth surface are R-chamfered with a relatively small radius of curvature (col. 4, lines 48-56).

The rounding of corners has two possible results: one corner having a larger radius or a smaller radius than the other corner. '469 discloses the claimed invention except for rounding of corner. It would have been an obvious matter of design choice to vary the shape of corners, since such a modification would have involved a mere change in the shape of a component. A change of shape is generally recognized as being within the ordinary level of skill in the art. In re Dailey, 357 F.2d 669, 149 USPQ 1966.

'469 also teaches the limitation of claim 10:

The downstream end of said in-row gap is open in such a manner as to be able to jet a processing gas therefrom and without passing the processing gas through said row-to-row gap (Figs. 18-20 show the jetting portion is more open than the gas introduction port, therefore, processing gas formed in the in-row gap can flow downward directly).

Response to Arguments

Applicant's arguments filed on 09/02/2008 have been fully considered but they are not persuasive:

8. In regarding to 35 USC 103(a) rejection of claims 1-6, 11-12, and 27 based on Perrin ('469) and Okui ('979), see pages 19 to top of page 26, Applicant's arguments are:

a. New claim limitation "a supporter that supports said workpiece ..." is not taught in '469, see the fourth and fifth paragraphs of page 19.

The examiner maintains '469 teaches "a supporter" as discussed in the claim rejection above. Further, in the combination of '469 and '979, '979 also provides a conveyor/supporter that supports said workpiece, as discussed in previous office action.

b. Applicant argues "No electrode longer than the distance between the jet port and the workpiece", see the bottom three lines of page 19 to the top two lines of page 21.

The examiner considers '469 teaches the claim limitations as set forth in the current independent claims 1, 4, 11, and 27, as discussed in the 35 USC 103 claim rejection above. Furthermore, the examiner considers Applicant failed to disclosed the support for such claim limitation, as discussed in the 35 USC 112 first paragraph rejection above.

c. Applicant argues "No Opposite Polarities", see the last two paragraphs of page 21 to page 22, by asserting col. 6, lines 50-55 of '469 as being all

electrodes should be connected to reference potential, see the first paragraph of page 22.

The examiner maintains '469 clearly teaches that "additionally either of the three generators may be omitted ...to reference potential" means either G11, G12, or G20 of Fig. 8 can be connected to ground. This does not require G11 and G12 be grounded simultaneously.

d. Applicant argues "No Elongate Electrode Members", see page 23 to the top of page 25, by requesting why Fig. 14 of '469 is arranged in short direction, see the last paragraph of page 23 and because rectangular electrode would increase the gap GP, '469 teaches away from using rectangular electrode, see the top paragraph of page 25.

In response to applicant's arguments against the references ('469) individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Furthermore, Fig. 14 is not relied upon as the basis of rejection. The motivation of electrode arrangement is dictated by the workpiece size and sub-electrode size, in a stationary workpiece of '469.

In the combination of '469 and '979, '979 teaches the electrodes arranged in two rows for workpiece in a conveyor (Fig. 3). While '469 teaches electrode of

each row at the same polarity, '979 is relied on to alternate polarity for each row of electrode.

The examiner maintains '469 does not teaches away from using rectangular electrode, as demonstrated in Fig. 14. Nor does '469 "criticizes, discredit, or otherwise discourage the solution claimed" see MPEP 2123 II. The need to increase GP does not affect the function of the electrode arrangement.

e. Applicant argues "Inadequate Official Notice", see the third paragraph of page 25 to the top of page 26, by asserting the examiner failed to provide any specific reasoning.

The examiner maintains the official notice has been properly set forth with specific reasoning "it is a common knowledge to arrange electrode (or other objects) in the length-wise direction for the purpose to extend the electrode (or objects)" in the previous office action. In other words, it is easy for any person having ordinary skill in the art to know that, to reach a target length of the substrate, fewer electrodes would be needed by arranging electrodes lengthwise/extending direction than to arranging electrodes width-wise/short direction.

9. In regarding to 35 103(a) rejection of claims 7-10 based on '469, '979, and Koga ('990), see the first complete paragraph of page 26 to page 27, Applicant's arguments are:

a. Based on allowable of parent claims, see the last complete paragraph of page 26..

The examiner maintains the parent claims are not allowable.

b. '990's electrode do not function to form plasma and are in contact with a latent image carrier to write an electrostatic image, and the examiner's previous response is wholly unsupportable because '990 is for a different purpose, a person of ordinary skill in the art would not find the requisite likelihood of success required to make such a combination, see lines 2-3 of the last paragraph.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In response to applicant's argument that '990 is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, '469 is seeking sub-electrode arrangement (abstract) while '990 provides an alternative for the sub-electrode arrangement; furthermore, the electrode array arrangement is pertinent to the particular problem the Applicant was concerned.

The examiner maintains that a person of ordinary skill in the art would find the likelihood of success required to make such a combination because '469

teaches electrodes with various shape, including ones with acute angle (Fig. 16); ones with obtuse angle (Fig. 17); and ones with rounded (Fig. 19) and '990 provides a very similar electrode structure arrangement.

c. Applicant's arguments are not commensurate in scope with the claims at least because Applicant argues that "discharge can more easily be occurred at the corner part ...", (emphasis added by examiner), see the middle paragraph of page 27.

Applicants' argument does not replace evidence that such advantage always occur in the limitation set forth in claim 7, see MPEP 2145 I.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KEATH CHEN whose telephone number is (571)270-1870. The examiner can normally be reached on 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on 571-272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/K. C./
Examiner, Art Unit 1792
/Michael Cleveland/
Supervisory Patent Examiner, Art Unit 1792